

Low Energy (DTL) Linac

Milorad Popovic

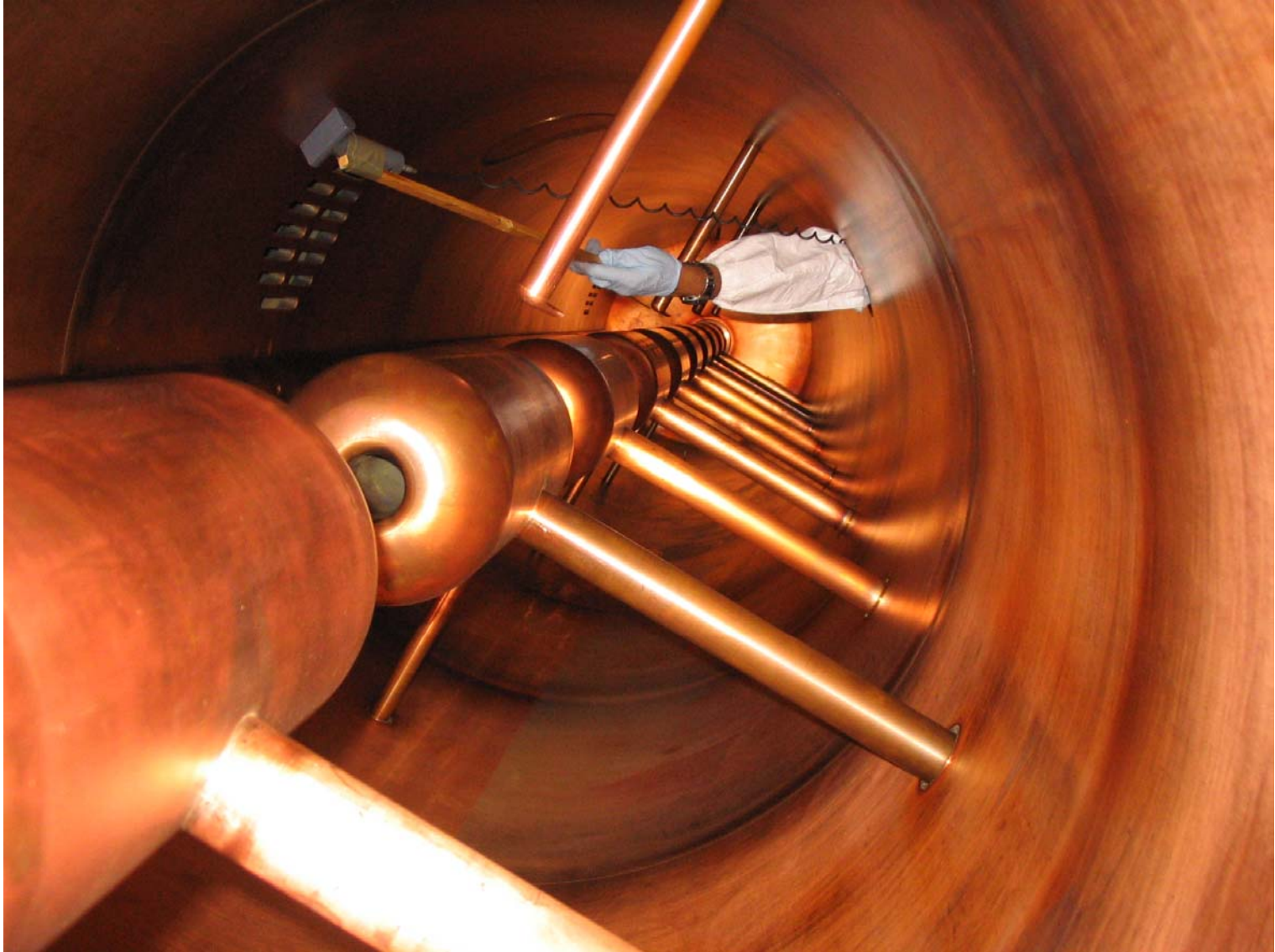
Parmila

- Fermilab-TM-2245, April 8, 2004

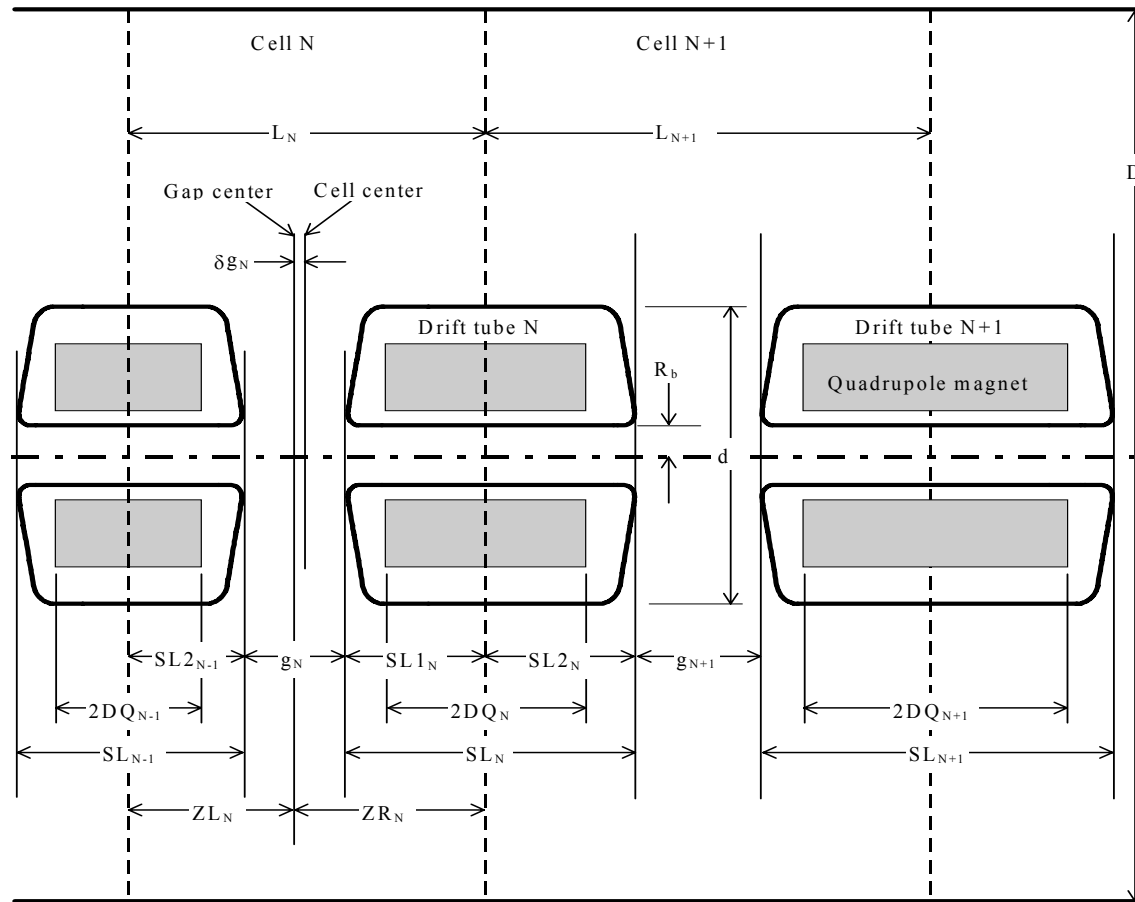
Using the PARMILA code running under PC-WINDOWS, the present performance of the Fermilab Drift Tube Linac has been analyzed in the light of new demands on the Linac/Booster complex (the Proton Source

- Proc. of the 1995 PAC, Vol. 2, pp. 917
VAX Based.

Drift Tube Linac Tank 5



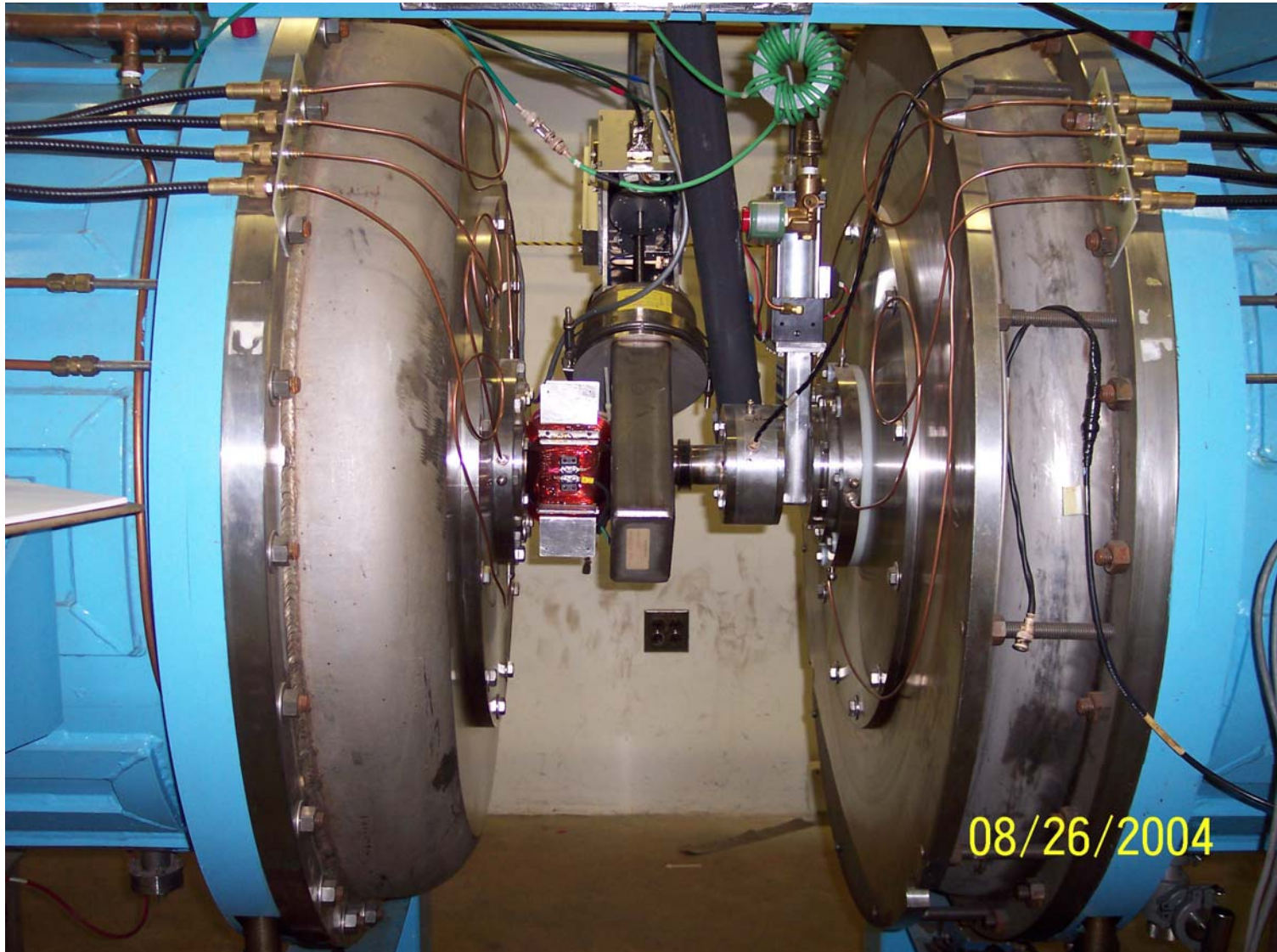
Drift Tube Linac Cell Geometry



Drift Tube Linac Tank 5

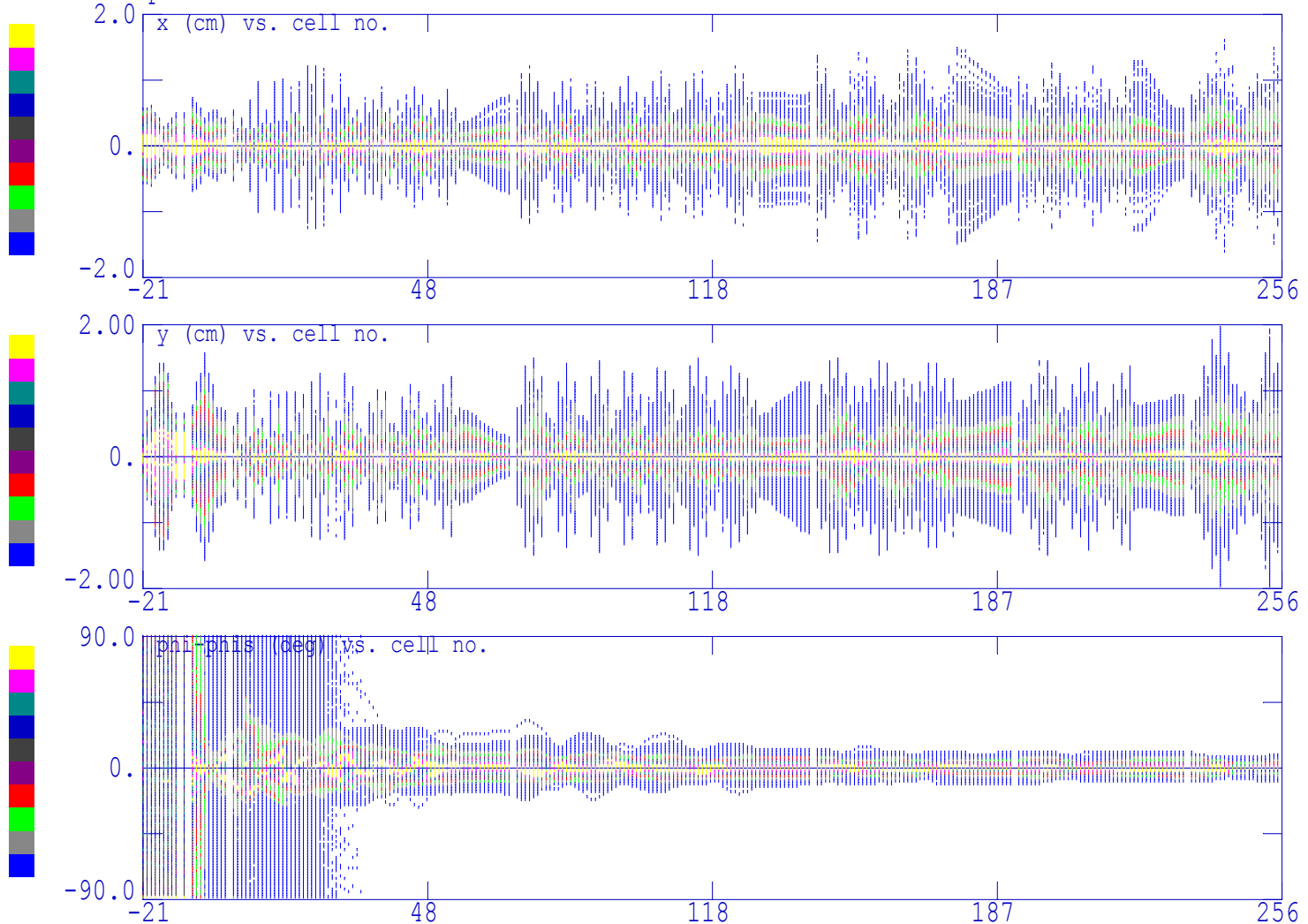


Drift Tube Linac Tank 5



Beam Envelopes

Transport from center of 90 bend to entrance to DTL1



Spoke with RF Focusing



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RF-Focusing Spoke Resonator

In this memorandum we discuss the feasibility of using finger-like structures added to a spoke resonator cavity to superimpose a modest amount of electric quadrupole focusing onto *the* high axial accelerating field. The motivation for this idea is to possibly eliminate the need for magnetic focusing elements such as solenoids between the spoke cavities in a cryomodule at very-low beam velocities. This greatly improves the real-estate accelerating gradient by two methods. The most obvious is that there would be a much higher longitudinal packing factor, resulting in a proportionately higher real-estate gradient. Perhaps more significant though is that the shorter drift distances between accelerating clusters produces a

Spoke with RF Focusing

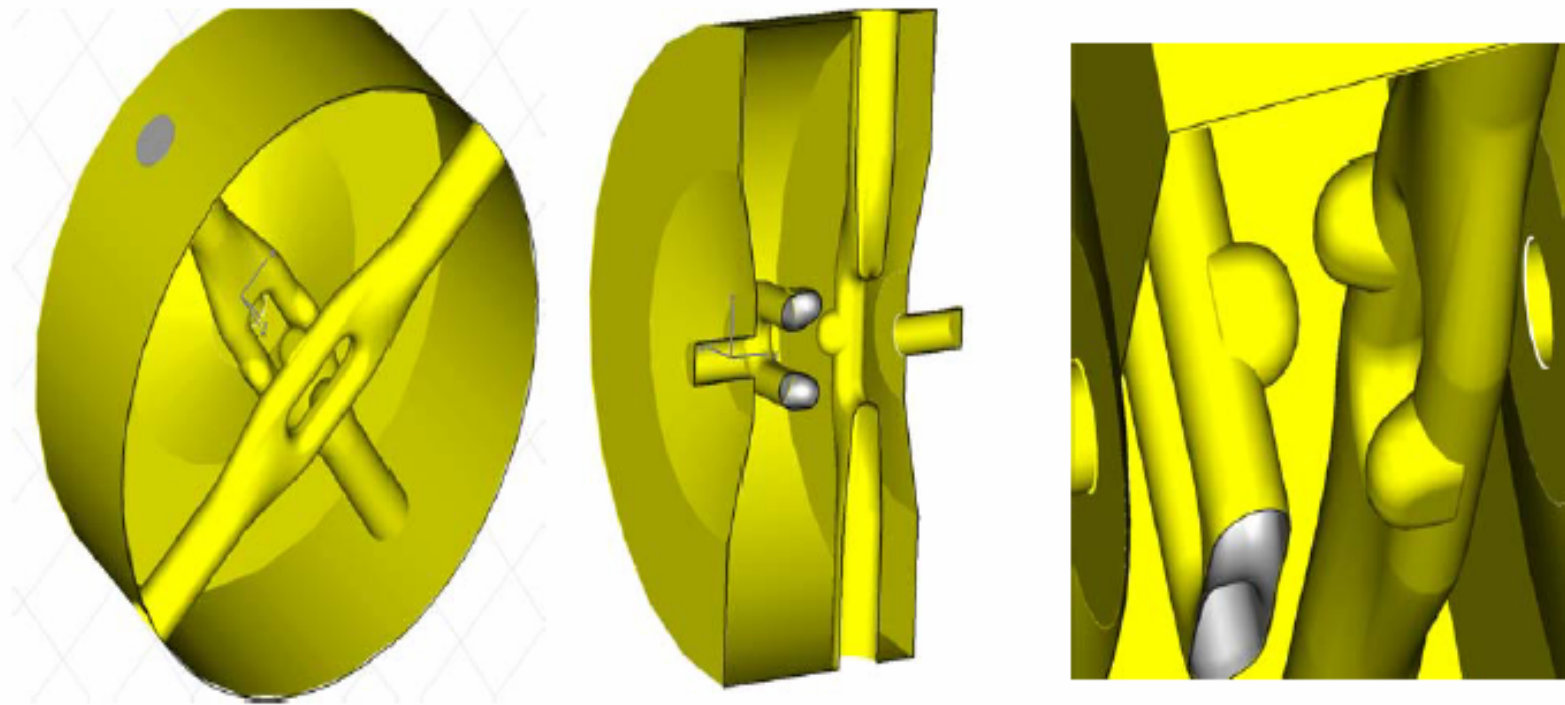
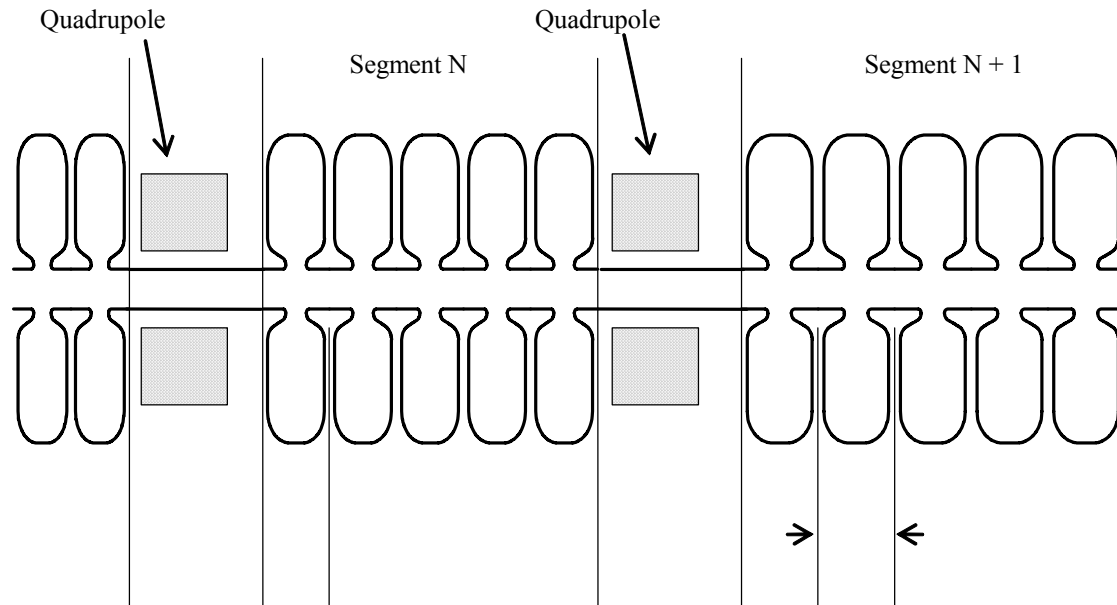


Figure 1 - Spoke geometry cut-away views.

Reentrant Pill Box



Simple Example

Reentrant $F = 335.34768$ MHz

